IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	:	
Masaru IZAWA et al.	:	
Serial No. 10/771,294	:	Group Art Unit: 1793
Filed: February 5, 2004	:	Examiner: Zheng, L.

For: Surface Treated Steel Material, a Method for Its Manufacture, and a Chemical Conversion Treatment Liquid

DECLARATION UNDER 37 C.F.R. 1.132

Commissioner of Patents
PO Box 1450
Alexandria, VA 22313

Sir:

I, Masaru Izawa, hereby declare as follows:

1) I am one of the named inventors for the above-captioned patent application.

2) I am familiar with the prosecution of this patent application, including the Office Action dated December 22, 2008, which rejects claims 8-11 and 20-25 under 35 U.S.C. §103(a) based on either United States Published Patent Application No. United States Published Patent Application No. 2002/0011281 to Geke or the combination of United States Patent No. 3,798,074 to Esler et al. (Esler) with an excerpt from the Metal Handbook, Second Edition, pages 1157-1158. This Declaration is made to demonstrate that the processing of Esler is not the same as that claimed and that the product produced according to the processing of Esler cannot be assumed to be the surface treated steel material having a chemical conversion film of a zinc phosphate type as is required in claim 8 of this application.

3) In order to demonstrate the patentability of the invention, testwork was performed to replicate the process of Esler and the product formed thereby and compare it to the process of the invention and the product formed thereby. As will be clear from the explanation of this testwork, the product of Esler is not the same as that claimed and it cannot be said that Esler produces the chemical conversion film required by claim 8 of the instant application.

4) Two steel compositions were used to compare Esler and the invention. One steel composition contained 1.5% Cr and the other contained 13% Cr. The specific compositions are shown in Exhibit 1 of this Declaration. Test pieces were made from the steel composition for testing according to the processing of Esler and the invention.

5) The two steel compositions in the form of the test pieces were coated according to the teachings of Esler and the invention. For the Esler coating, the methodology described in col. 6, lines 6-10 of Esler and the last line of Table III of Esler was used. More particularly the following components were mixed together to form the coating solution in totally 1000 ml:

Component	Amount
orthophosphoric acid (assay 85 mass percent)	139.5 g (82.5 ml)
chromium trioxide	129 g
ammonium hydroxide (NH_3 25 mass percent)	128.1 g (141 ml)
zinc oxide	50.9 g
potassium silicate in water (28 mass percent)	179.1 g (145 ml)
water	the remainder
Total	1000 ml

This is the same coating solution described on page 3 of Exhibit A that was attached to the response filed in the instant application on October 3, 2008. The Esler test pieces were immersed in the coating solution at room temperature for ten minutes and then were air dried. The dried test pieces were cured at a temperature of 316 °C (approximately 600 °F) for two minutes. The curing temperature was derived from col. 6, line 40 of Esler. The time period was based on col. 6, line 39. Exhibit 2 shows two photographs of the apparatus used to cure the samples of Esler. The photograph on the right shows the apparatus with the door open and samples placed inside. The photograph on the left shows the temperature setting of 316 °C.

6. Chemical conversion treatment of the test pieces according to the invention was performed by adding potassium tetraborate to a commercially available zinc phosphate treatment liquid to form the claimed chemical conversion treatment liquid. The commercially available zinc phosphate treatment liquid was "PALBOND 181X", which is sold by Nihon Parkerizing Co., Ltd (www.parker.co.jp). The makeup of the PALBOND 181X treatment liquid is as follows: zinc nitrate: 25 – 30 %, zinc phosphate: 10 –15 %, orthophosphoric acid: 5 – 10 %, nickel nitrate: less than 0.1 % and the remainder water. The exact makeup of the liquid used to treat the test pieces according to the invention was:

Component	Amount
potassium tetraborate	0.25 mass percent
zinc phosphate treatment liquid	10 mass percent
water	89.75 mass percent

The test pieces of the steel sheet were immersed in the chemical conversion treatment liquid for ten minutes. The liquid was at 75 °C during the immersing process. Following the immersion treatment, the test pieces were then rinsed with water and dried.

7. Exhibit 3 shows two sets of color photographs of the test pieces according to the invention and Esler. The test pieces are made from the 1.5% and 13% Cr steels of Exhibit 1. On the right are photographs of the test pieces of both types of alloys before and after the chemical conversion treatment of paragraph 6 above (the invention). On the left are photographs of both alloys subjected to the Esler processing as detailed in paragraph 5 above, i.e., before treatment, after immersing and drying, and after curing (Esler). The test pieces of the invention are dark grey in color, indicative of a chemical conversion film. In contrast, the Esler test pieces are yellow after immersing and dark green after curing. This visual depiction demonstrates that the type of coating on Esler is not the same as that found on the test pieces that correspond to the inventive processing. Otherwise, the colors of the test pieces of the Esler processing would be similar to the dark grey color of the test pieces subjected to the inventive processing.

8. X-ray diffraction analysis was also conducted on the test pieces to determine their composition and respective differences or similarities. Exhibits 4 and 5 depict the analysis results for Esler's 1.5% Cr test piece. Exhibit 4 shows the pattern on one scale, with Exhibit 5 showing an expansion of Exhibit 4 to show more detail in the area to the left of the peaks, i.e., the amorphous substance area. Exhibits 6 and 7 depict the analysis results for Esler's 13% Cr test piece. Similar to Exhibit 5, Exhibit 7 is an expansion of the Exhibit 6 analysis and it shows more detail regarding the amorphous substance area to the left of the peaks.

Exhibits 8 and 9 show the x-ray diffraction analysis for test pieces abiding by the invention, with Exhibit 8 corresponding to the 1.5% Cr steel and Exhibit 9 corresponding to the 13% Cr steel. It is apparent from Exhibits 8 and 9 that there are a number of peaks on the left side of the graphs which demonstrate the presence of Hopeite or zinc phosphate. Comparing Exhibits 8 and 9 of the invention to Exhibits 4-7 of Esler's test

pieces reveals that Exhibits 4-7 do not show any defined peaks of Hopeite (zinc phosphate). The Esler Exhibits 4-7 only show broad peaks of the amorphous film's characteristics where the distinct peaks representing Hopeite (zinc phosphate) are found in Exhibits 8 and 9. From this comparison, I conclude that the coated product produced according to the teachings of Esler is not a chemical conversion film and cannot be considered to be the same as that of the surface treated steel material defined in claim 8. This also refutes, in my opinion, the Examiner's position that the similarity in composition between the processing of Esler and that used in the invention means that the thus-produced products are the same. To the contrary, the processing of Esler does not produce a chemical conversion film as defined in claim 8.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of any patent issued thereon.

Respectfully submitted,

May 12, 2009
Date

Masaru Izawa
Masaru Izawa

1.5%Cr steel

Chemical Composition (wt%)									
C	Si	Mn	P	S	Cu	Cr	Ni	Mo	Fe
0.31	0.65	0.55	0.025	0.03	0.05	1.48	0.08	0.52	Bal.

13%Cr steel

Chemical Composition (wt%)									
C	Si	Mn	P	S	Cu	Cr	Ni	Mo	Fe
0.19	0.28	0.85	0.017	0.03	0.03	12.52	0.11	0.01	Bal.

Exhibit 1

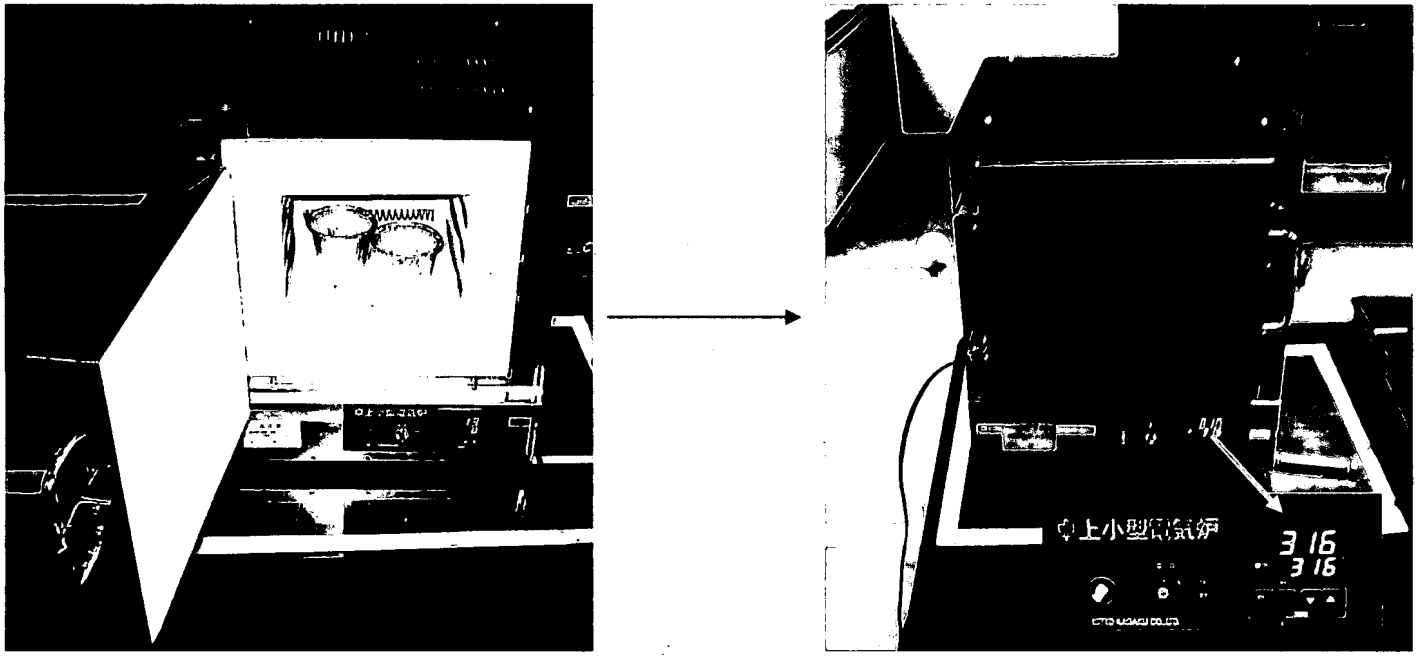

EXHIBIT 2

Method for cure of coating film by Esler's invention solution

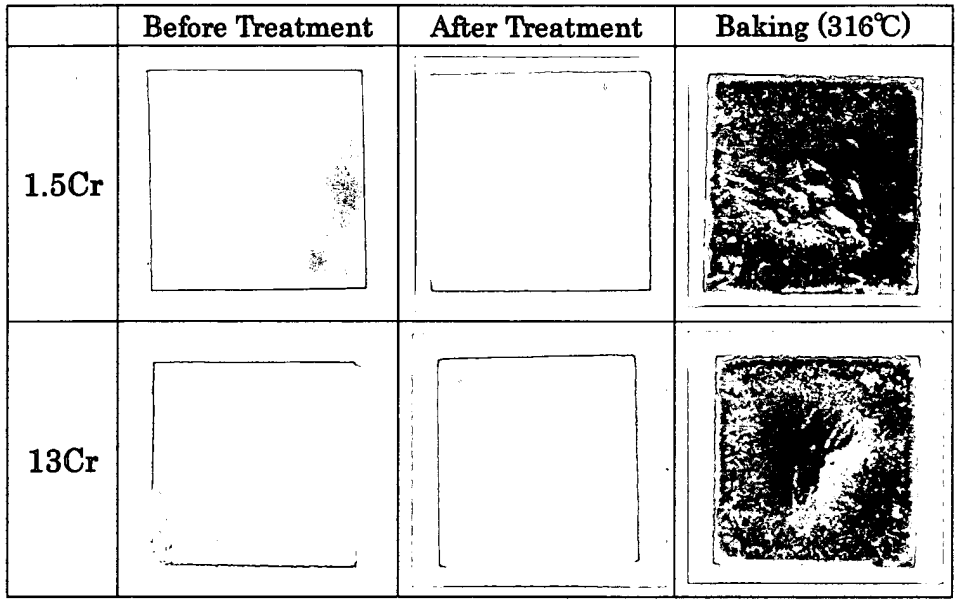

Fig.1 Condition of coating film on 1.5Cr steel & 13Cr stainless steel by Esler's invention solution. (USP 3,798,074)

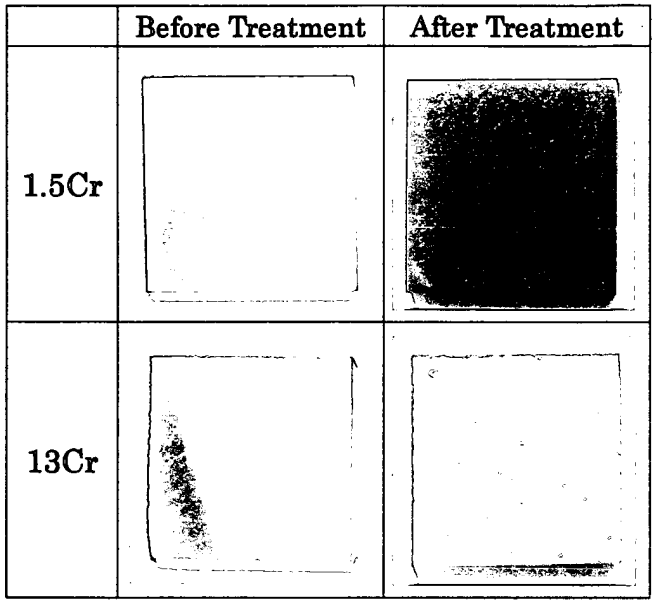

Fig.2 Condition of coating Zinc phosphate film on 1.5Cr steel & 13Cr stainless steel by chemical conversion treatment liquid of Izawa et al. (Izawa et al., US 2004/0154700 A1)

EXHIBIT 3

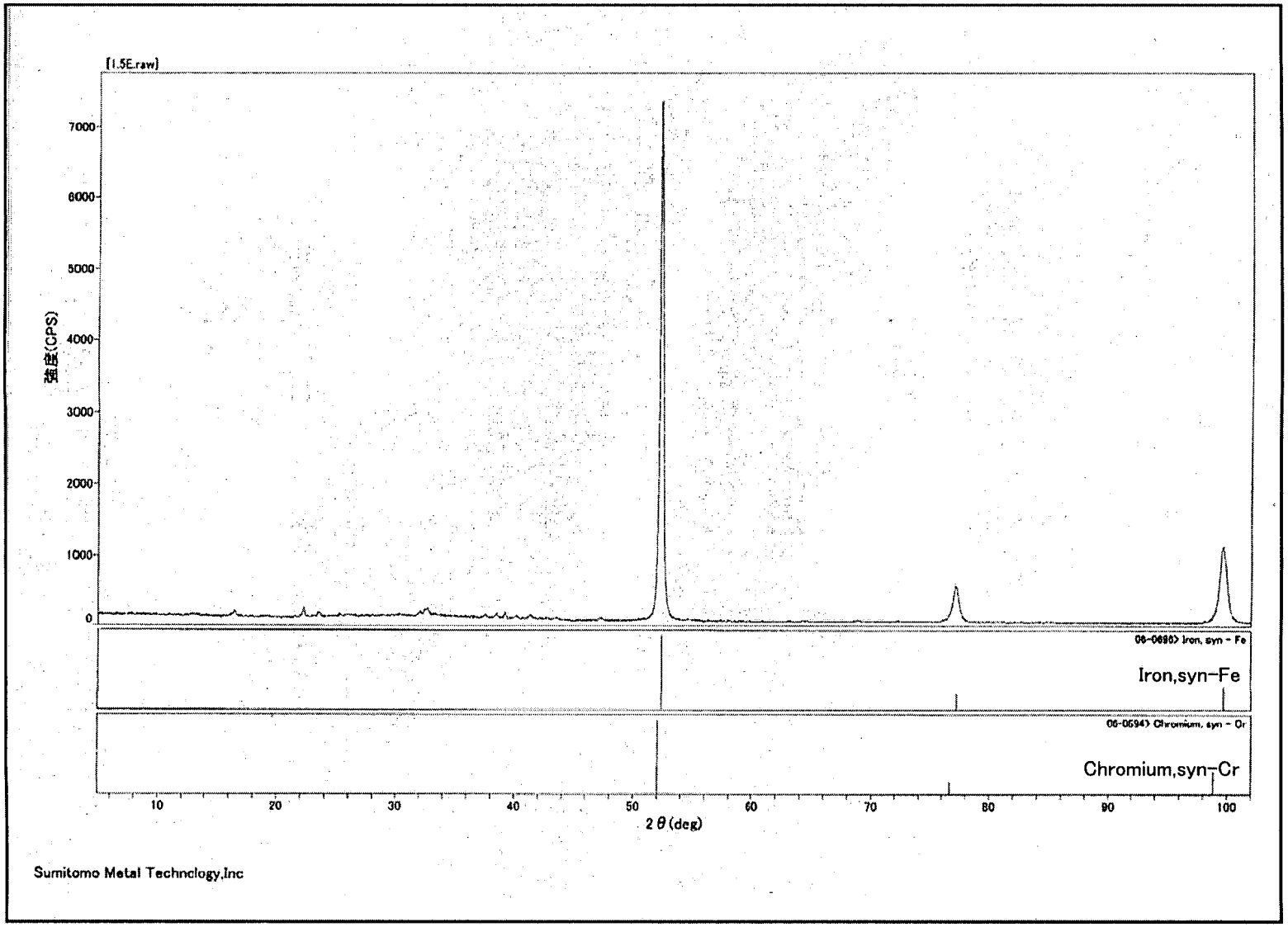

EXHIBIT 4 **Condition of coating film on 1.5Cr steel by Esler's invention solution**

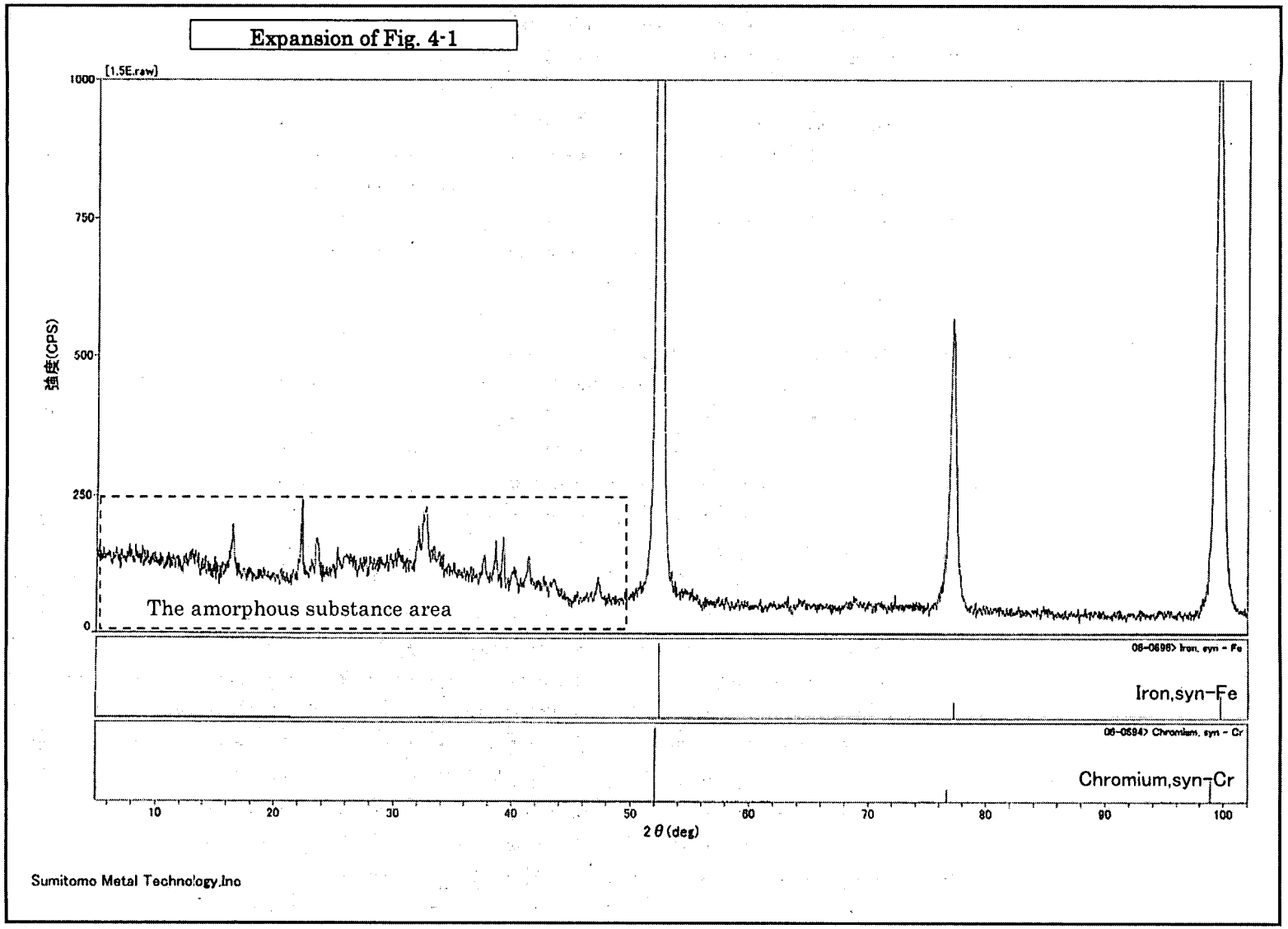

EXHIBIT 5 **Condition of coating film on 1.5Cr steel by Esler's invention solution**

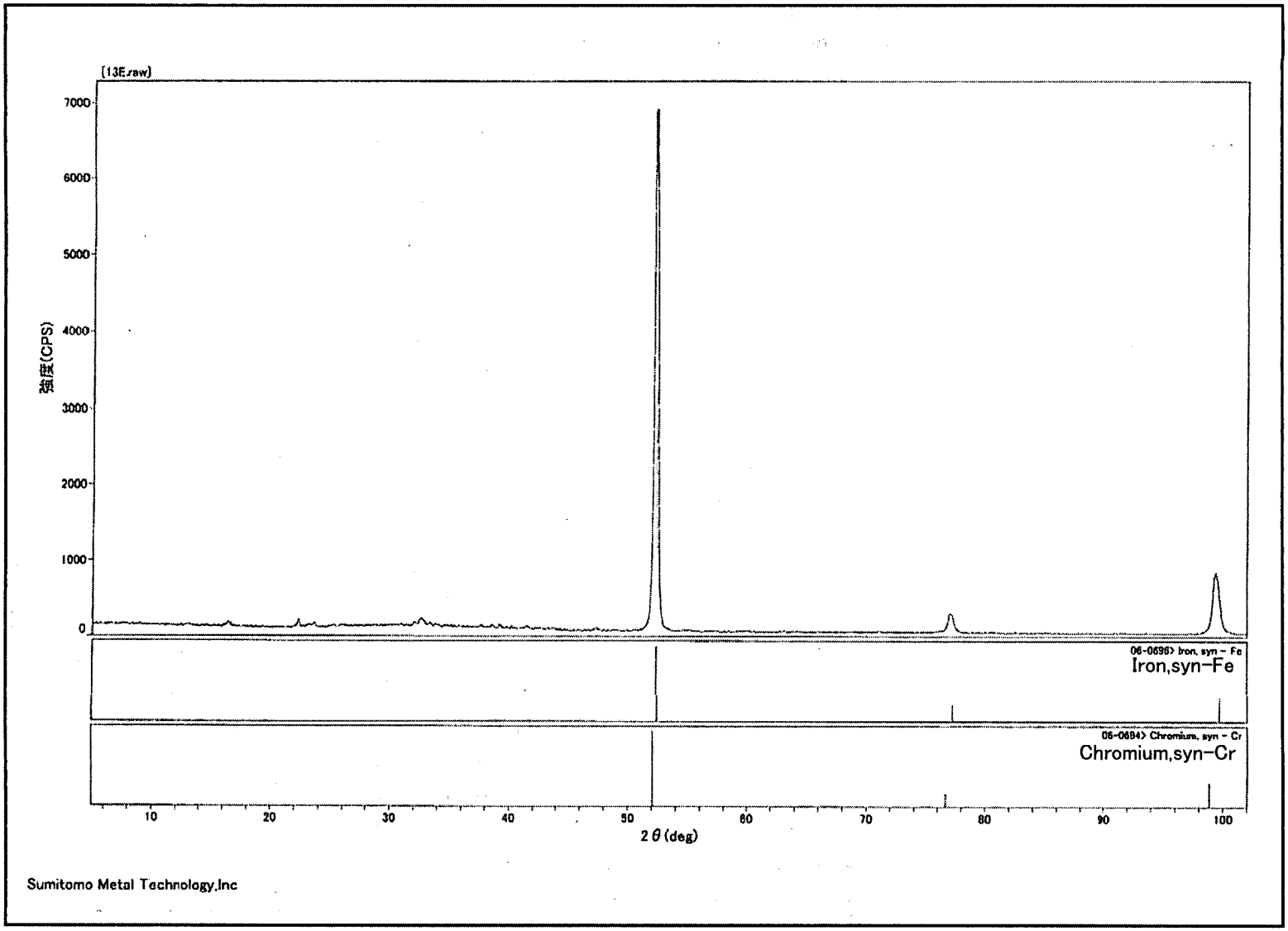

EXHIBIT 6 **Condition of coating film on 13Cr stainless steel by Esler's invention solution**

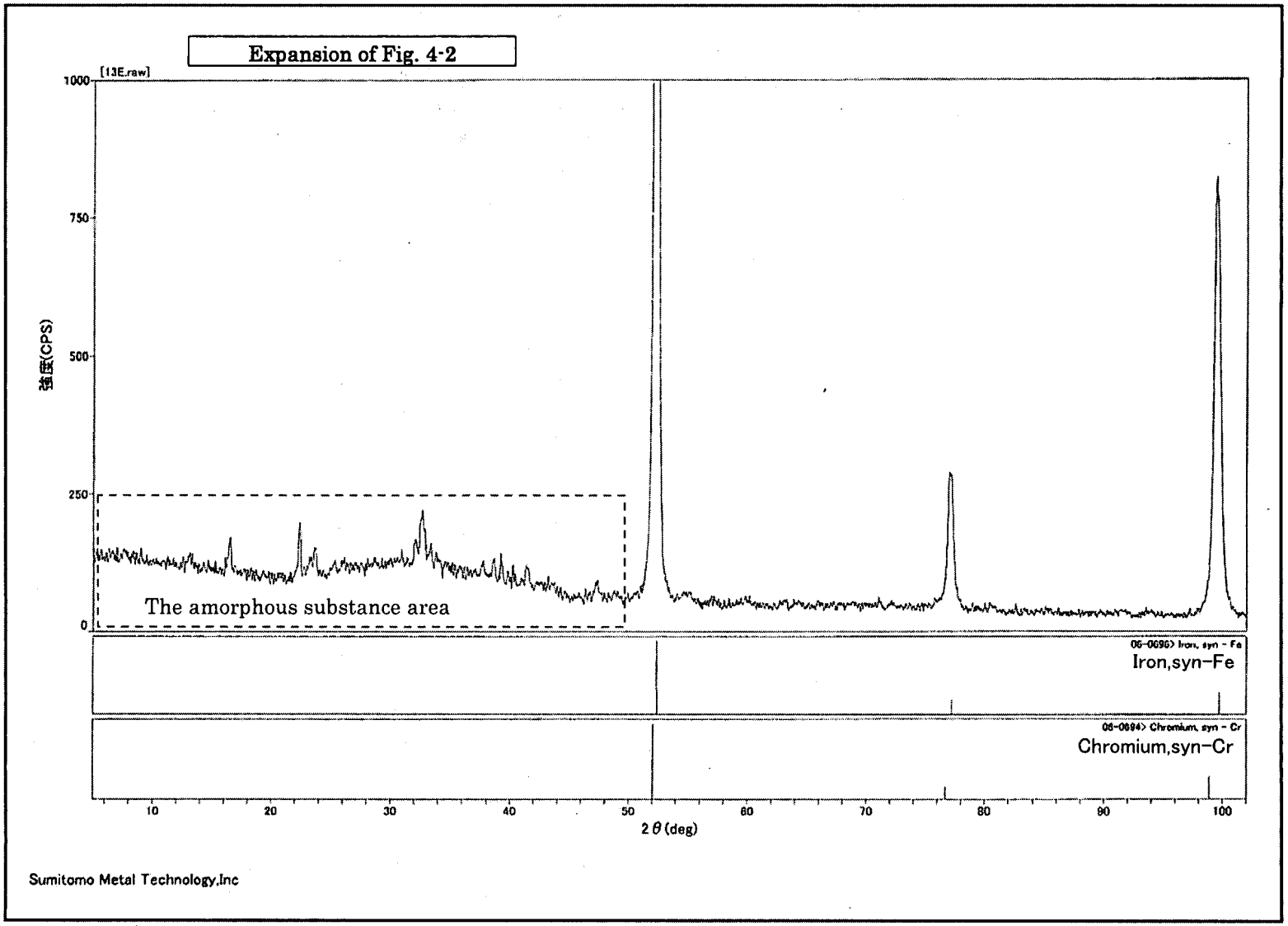

EXHIBIT 7 **Condition of coating film on 13Cr stainless steel by Esler's invention solution**

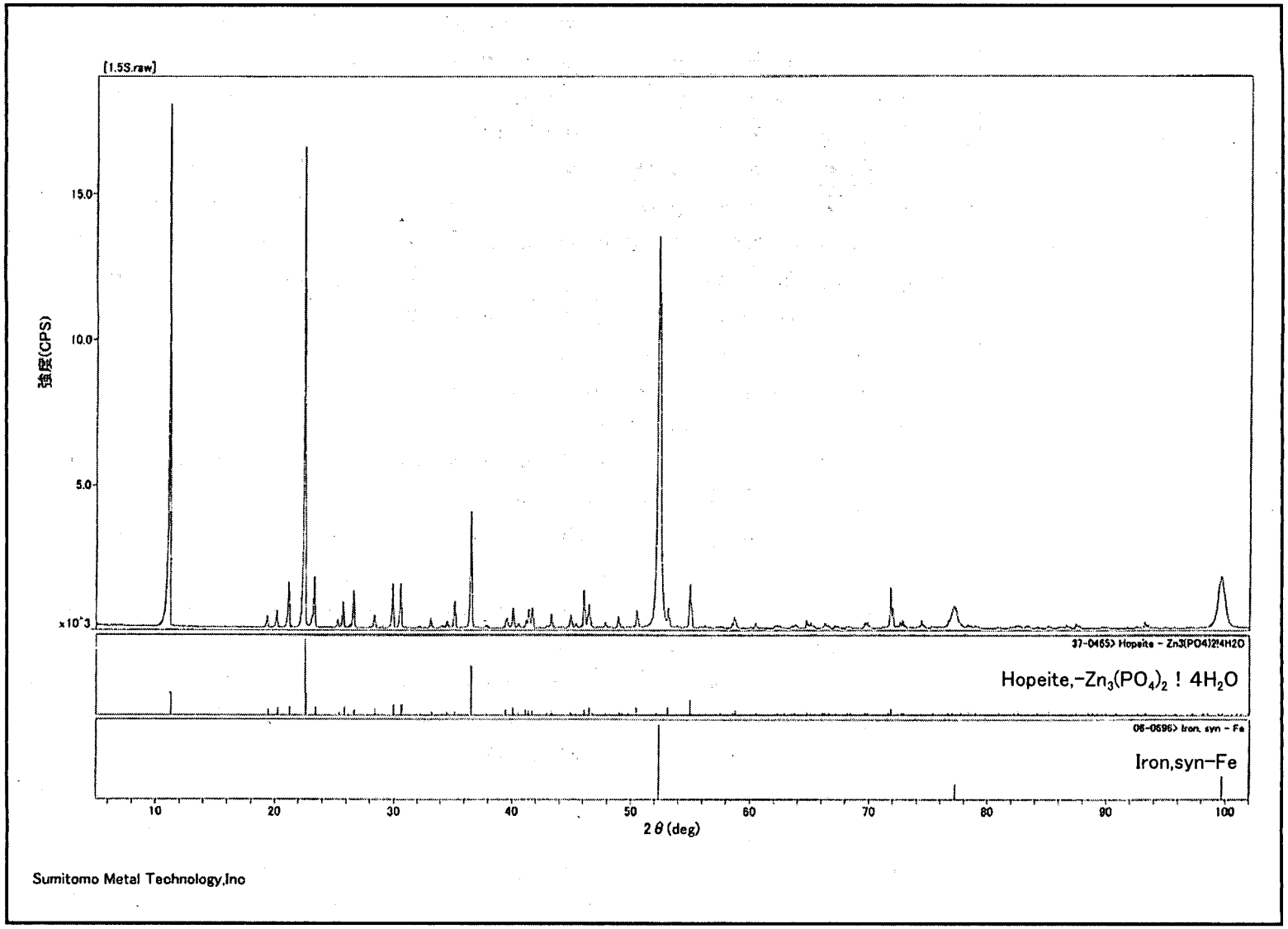

EXHIBIT 8 **Condition of coating Zinc phosphate film on 1.5Cr steel by chemical conversion treatment liquid of Izawa et al.**

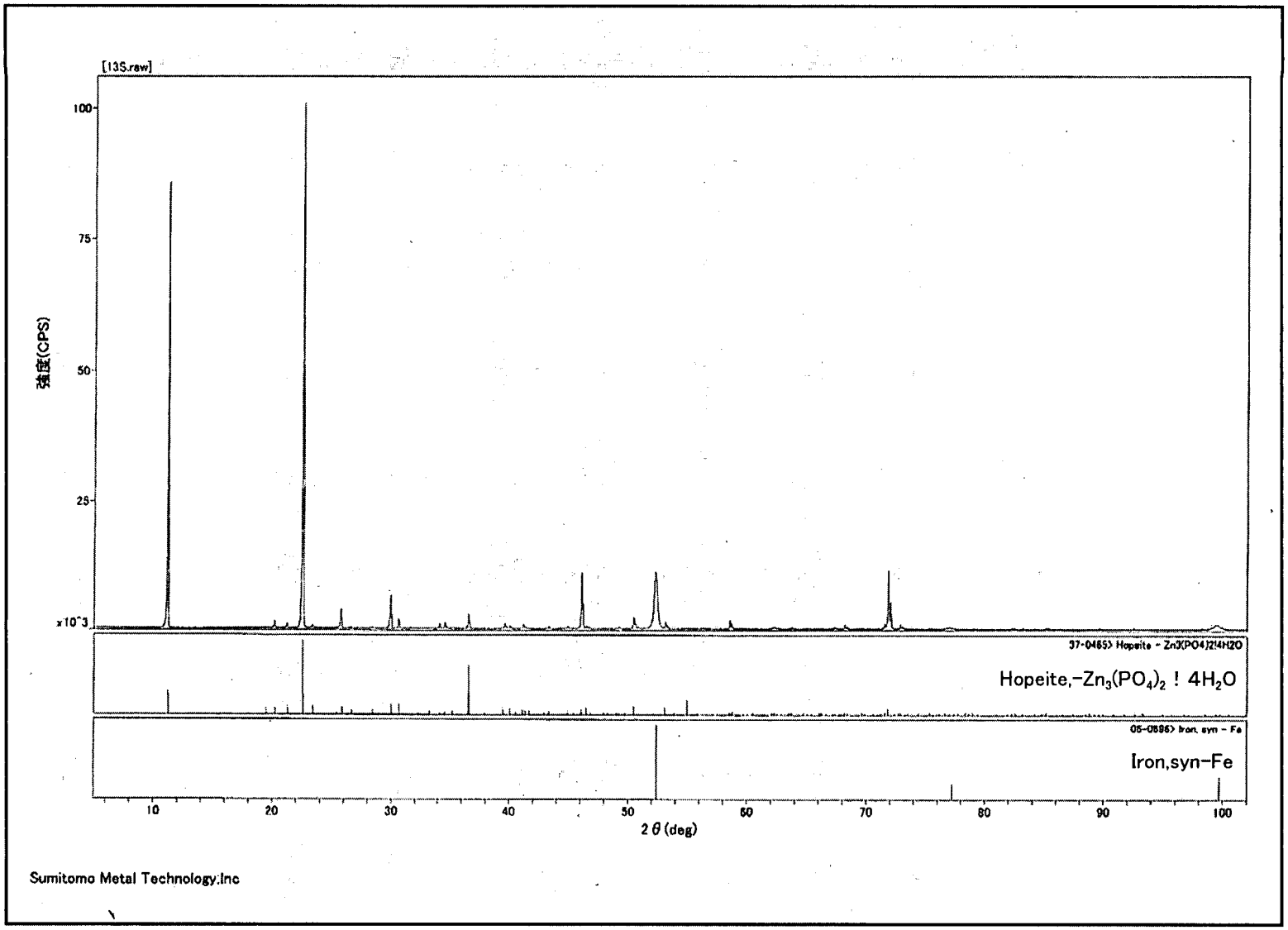

EXHIBIT 9 **Condition of coating Zinc phosphate film on 13Cr stainless steel by chemical conversion treatment liquid of Izawa et al.**